

JUNE 21-22
CLAREMONT HOTEL
BERKELEY, CA

Summary of
CSNET Planning
Group Meeting

ATTENDEES:

BRUCE ARDEN:	PRINCETON UNIV.
ALAN BATEON:	UNIV. OF VIRGINIA
VINTON CERF:	DARPA
FERNANDO CORBATO:	M.I.T.
KENT CURTIS:	NSF
PETER DENNING:	PURDUE UNIV.
DAVID FARBER:	UNIV. OF DELAWARE
RICHARD FATEMAN:	UNIV. OF CALIFORNIA-BERKELEY
JEROME FELDMAN:	UNIV. OF ROCHESTER
NICO HABERMANN:	CARNEGIE-MELLON UNIV.
ANTHONY HEARN:	UNIV. OF UTAH
PAUL HELLER:	EDUNET/EDUCOM
WILLIAM KERN:	NSF
LAWRENCE LANDWEBER:	UNIV. OF WISCONSIN
ROBERT RITCHIE:	UNIV. OF WASHINGTON

PREAMBLE:

THE CSNET PLANNING GROUP WAS ORGANIZED TO STUDY THE ESTABLISHMENT OF A COMPUTER COMMUNICATIONS NETWORK TO SUPPORT COMPUTER SCIENCE RESEARCH (CSNET). PRELIMINARY WORK, INCLUDING TWO MEETINGS OF THE PLANNING GROUP AND A SURVEY OF COMPUTER SCIENCE DEPARTMENTS, HAS BEEN SUPPORTED BY A GRANT FROM THE NSF. THE FIRST MEETING WAS HELD IN BERKELEY ON JUNE 21-22. THE SECOND WILL BE ON THE EAST COAST IN MID AUGUST. DURING THE INTERVENING PERIOD, A NUMBER OF COMMITTEES ESTABLISHED AT THE FIRST MEETING WILL PREPARE REPORTS AND THE DEPARTMENT SURVEY WILL BE COMPLETED AND ANALYZED. THE PLAN ADOPTED AT THE AUGUST MEETING WILL BE DOCUMENTED IN A FORMAL PROPOSAL TO FUNDING AGENCIES WITH NOVEMBER AS THE TARGET DATE FOR SUBMISSION.

SYNOPSIS OF MEETING:

THE MEETING BEGAN WITH SEVERAL SHORT PRESENTATIONS:

- INTRODUCTION- L. LANDWEBER
- NSF VIEW- W. KERN
- DARPA VIEW- V. CERF
- ORIGINAL CSNET PROPOSAL DESCRIPTION- P. DENNING
- UTAH X.25 IMPLEMENTATION- A. HEARN
- EDUNET/EDUCOM: FACILITATING SERVICES- P. HELLER
- MMDP: AN INTERNETWORK MEMO DISTRIBUTION CAPABILITY- D. FARBER

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WILLIAM KERN INDICATED THAT THE COMPUTER SCIENCE RESEARCH NETWORK SHOULD HAVE THE FOLLOWING CHARACTERISTICS: OPEN TO ALL; MULTIPLICITY OF SERVICES (FILE TRANSFER, MESSAGE SERVICE, REMOTE DATABASE ACCESS, REMOTE RESOURCE SHARING); CONNECTABLE TO OTHER NETWORKS; COST PROPORTIONAL TO USE; SELF SUSTAINING (WITHIN 5 YEARS). THE NETWORK SHOULD INCORPORATE BOTH ARPANET AND COMMERCIAL NETWORK EXPERIENCE. ISSUES TO BE CONSIDERED INCLUDE: ARPANET/COMMERCIAL NETWORK CHARACTERISTICS; ASSESSMENT OF NEEDS; TRAFFIC BY TYPE; EXISTING NETWORK SERVICES AND PERSONNEL FLOW; ORGANIZATION (STRUCTURE, POLICY BOARD, EASE OF ENTRY, FINANCING). K. CURTIS ADDED THAT THERE IS A NEED FOR CONNECTIVITY OF THE ENTIRE COMMUNITY AND THAT CSNET MUST SERVE AS A UNIFYING FORCE.

ANTON CERN STATED THAT DARPA IS INTERESTED IN COOPERATING WITH NSF TO ESTABLISH CSNET. HE AGREED WITH KERN'S COMMENTS ON NETWORK CHARACTERISTICS AND ISSUES TO BE CONSIDERED. BECAUSE OF THE VARIETY OF REQUIREMENTS FOR BANDWIDTH AND SERVICE LEVELS, AN APPROACH WHICH EMPLOYS A MULTIPLE NETWORK OPERATION COMBINING ARPANET AND A COMMERCIAL NETWORK SHOULD BE ADOPTED. FOR EXAMPLE, TO DO RESEARCH ON A NETWORK ONE WOULD USE ARPANET, WHILE TO GET MORE ELEMENTARY SERVICE A COMMERCIAL NETWORK WOULD SUFFICE. DARPA IS READY TO HELP IN ANY WAY THEY CAN AND IS PARTICULARLY INTERESTED IN ADDING ADDITIONAL GROUPS TO ARPANET. THEY CAN ALSO HELP BY MAKING RESOURCES AVAILABLE. CSNET SHOULD BE VIEWED AS A SINGLE SYSTEM WHICH WILL ENCOMPASS PARTS OF A NUMBER OF PHYSICAL NETWORKS. ALL COMPUTER SCIENCE RESEARCH GROUPS SHOULD HAVE ACCESS VIA ONE OF THE COMPONENT NETWORKS.

PETER DENNING OUTLINED THE ORIGINAL CSNET PROPOSAL PREPARED BY ELEVEN COMPUTER SCIENCE DEPARTMENTS. THE PROPOSAL WAS MOTIVATED BY THE NEED TO ADDRESS THE PERSONNEL AND LOW PRODUCTIVITY IN SOFTWARE DEVELOPMENT PROBLEMS AFFECTING COMPUTER SCIENCE DEPARTMENTS. NECESSARY CHARACTERISTICS INCLUDE: OPEN ACCESS; VARIABLE SERVICE LEVELS; COST PROPORTIONAL TO USAGE AND SERVICE LEVEL. A COMMERCIAL NETWORK WAS TO SERVE AS THE COMMUNICATIONS BACKBONE WITH ACCESS VIA THE X.25 PROTOCOL (SEE HEARN COMMENTS ON THE UTAH X.25 IMPLEMENTATION). SERVICES WOULD BE AS OUTLINED ABOVE BY W. KERN. REQUIRED TECHNICAL TASKS INCLUDED SPECIFICATION/IMPLEMENTATION OF HIGH LEVEL PROTOCOLS AND INTERFACING OF THE UTAH X.25 IMPLEMENTATION TO ADDITIONAL OPERATING SYSTEMS.

TONY HEARN DESCRIBED THE UTAH X.25 IMPLEMENTATION WHICH RUNS ON A PDP 11/34 FRONT-END AND HAS NOW BEEN CERTIFIED BY ELENET. THE WORK WAS INITIATED TO FACILITATE COMMUNICATION BETWEEN FOUR GROUPS (CAMBRIDGE, HAWAII, JAPAN, UTAH) COLLABORATING ON A SYMBOLIC ALGEBRA PROJECT. A HANDOUT DESCRIBING THE SYSTEM WAS DISTRIBUTED. THE FRONT-END CONNECTION TO OPS-20 IS COMPLETE, AND REQUIRED 15 PROGRAMMER MONTHS. AP-

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* APPROXIMATELY 3 TO 6 MONTHS EFFORT WILL BE REQUIRED FOR SUCH ADDITIONAL OPERATING SYSTEM CONNECTION.

* VINT CERF SUGGESTED THAT USE OF A FRONT-END MIGHT ACTUALLY INVOLVE AS DIFFICULT A HOST OPERATING SYSTEM MODIFICATION (TO PROVIDE THE HOST TO FRONT-END CONNECTION) AS WOULD BE REQUIRED IF THE X.25 IMPLEMENTATION WERE TO RESIDE IN THE HOST. HEARN RESPONDED THAT USE OF A FRONT-END AVOIDS THE PROBLEM OF RECERTIFICATION WHICH WOULD BE REQUIRED FOR EACH NEW HOST RESIDENT IMPLEMENTATION.

PAUL HELLER DESCRIBED THE ORGANIZATION AND GOALS OF EDUNET/EDUCOM. EDUCOM IS A CONSORTIUM OF 350 UNIVERSITIES WHOSE MISSION IS TO IMPROVE THE USE OF TECHNOLOGY IN HIGHER EDUCATION. EDUNET PUBLISHES INFORMATION ON SERVICES AVAILABLE FROM ITS MEMBERS AND ALSO PROVIDES FOR VOLUME DISCOUNTS ON PURCHASE OF COMMUNICATIONS SERVICES FROM TELENET (CURRENTLY 22%). HE OUTLINED THE INITIAL ORGANIZATION OF EDUNET BASED ON ESTABLISHMENT OF A PLANNING COUNCIL WHICH CONTRACTED WITH EDUCOM FOR MANAGEMENT TASKS, INITIALLY FOR FIVE YEARS. A NEW SYSTEM, UTILIZING AN APPLE COMPUTER FOR AUTOMATIC LOG-IN WAS ALSO DESCRIBED. HE EMPHASIZED THE IMPORTANCE OF INTERDISCIPLINARY GROUPS TO EDUCOM, AND NOTED RELATIONSHIPS ALREADY ESTABLISHED WITH GROUPS IN LAW, EDUCATION AND CHEMICAL ENGINEERING.

DAVE FARBER DESCRIBED HIS INTERNET MAIL SYSTEM (MMDF). THE GOAL IS TO PROVIDE LOW COST MEMORANDUM TRANSFER SERVICES TO GROUPS THAT DO NOT HAVE A HOST ON A COMPUTER NETWORK. IT IS BASED ON USE OF A SMALL COMPUTER WHICH STORES MESSAGES LOCALLY AND THEN RELAYS THEM TO A HOST ON A NETWORK. MESSAGES FOR THE LOCAL SITE ARE PICKED UP FROM THE NETWORK HOST. AT PRESENT THE SYSTEM CURRENTLY OPERATES AT 300BAUD BUT THERE IS NO REASON WHY HIGHER RATES CAN NOT BE USED IF THE NECESSARY MODEMS ARE AVAILABLE. MMDF INCLUDES SUCH FEATURES AS RETURN OF UNDELIVERABLE MAIL AND RETRANSMISSION OF MESSAGES WHEN NECESSARY. AT PRESENT THE SYSTEM CAN DEAL WITH SEVERAL NETWORKS INCLUDING ARPANET. A UUCP CAPABILITY WILL SOON BE AVAILABLE. THE IMPLEMENTATION IS IN C.

TERMINOLOGY: AT THIS POINT, TWO AMBIGUITIES WERE RESOLVED. IT WAS AGREED THAT CONET WOULD BE USED TO DESIGNATE ANY COMPUTER SCIENCE RESEARCH NETWORK ARISING FROM THESE SESSIONS, AND NOT BE RESTRICTED TO THE PARTICULAR STRATEGY IN THE YEAR-OLD PROPOSAL. THE GROUP THEN FOCUSED UPON AMBIGUITIES ABOUT PROTOCOL LEVELS WHICH WERE PLAGUING THE DISCUSSION. A CHART WAS DEVELOPED, LARGELY BY VINT CERF, TO HELP IN THE DISCUSSION:

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PHIOLOGY FOR PROTOCOL LEVELS

TERMINOLOGY	LEVEL #	INTER-NET TERMINOLOGY
PHYSICAL CONTROL	1	HARDWARE
LINK CONTROL	2	LINK
WORK CONTROL	3	NETWORK
TRANSPORT:END TO	4A	INTER-NET - DATAGRAM
END CONTROL	4B	END-END SERVICES (TCP)
SESSION CONTROL	5	UTILITIES (FTP,MAIL)
PRESENTATION	6	APPLICATIONS
APPLICATIONS	7	

URING THE DISCUSSION OF THESE LEVELS AND A DISCUSSION OF PROTOCOLS IN GENERAL, IT WAS NOTED EXPLICITLY THAT AN EFFORT SUCH AS THE ONE THAT WOULD BE MOUNTED BY THIS GROUP IN ATTEMPTING AT PROTOCOLS TO BE USED ON CSNET WOULD DEVELOP A SET OF PROTOCOL STANDARDS WHICH MIGHT WELL INFLUENCE MANUFACTURERS WHO ARE GROUPING TOWARDS PROTOCOLS FOR THEIR OWN NETWORKS.

DISCUSSION:

THERE WAS A WIDE RANGING DISCUSSION ON THE OBJECTIVES OF CSNET AND HOW THEY CAN BEST BE ACHIEVED.

SRF STATED THAT WE ARE DEALING WITH A NATIONAL PROBLEM WHOSE SOLUTION CALLS FOR JOINT ACTION AMONG GOVERNMENT AGENCIES. DARPA PLANS TO PROVIDE ARPANET ACCESS TO ADDITIONAL SITES BUT SINCE NOT ALL CAN BE ACCOMMODATED, THERE SHOULD BE WORK ON GATEWAYS TO CONNECT ARPANET WITH OTHER NETWORKS. THE GROUP URGED CONTINUATION OF THIS JOINT APPROACH (SEE ACTION ITEM 1).

ERN SUGGESTED THAT A STAGED APPROACH TO IMPLEMENTATION SHOULD BE ADOPTED BASED ON PROVIDING THOSE SERVICES DESIRED BY THE LARGEST SUBSET OF THE COMMUNITY FIRST. THIS PROPOSAL, WITH MINOR MODIFICATION WAS ACCEPTED BY THE PLANNING GROUP (SEE ACTION 2). IT WAS ALSO AGREED THAT A MINIMAL SERVICE SUCH AS MMDF SHOULD BE AVAILABLE QUICKLY AND SHOULD ALSO PROVIDE A SERVICE ALTERNATIVE FOR THOSE WITHOUT A LOCAL NETWORK HOST.

ORRATO INDICATED THE IMPORTANCE OF PROVIDING A SUBSIDY SO AS TO FACILITATE ACCESS TO CSNET BY THE ENTIRE COMMUNITY. THIS RESULTED IN A DISCUSSION, THOUGH NOT A CONSENSUS ON THE QUESTION OF SUBSIDIES (WHO, HOW MUCH, HOW LONG), AND OF THE SPECIFICATION OF "THE ENTIRE COMMUNITY".

THERE WAS AGREEMENT THAT REGARDLESS OF THE ARCHITECTURAL FRAMEWORK, THERE SHOULD BE ONE INTEGRATED MANAGEMENT/GOVERNANCE STRUCTURE. THIS SHOULD INCLUDE REPRESENTATIVES BOTH FROM THE COMMUNITY AND FROM THE FUNDING

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DEPARTMENTS. UNLESS THE RESEARCH GROUPS SHOULD BE BASED ON COOPERATIVE WORK BETWEEN THEM AND A COMPUTER SCIENCE GROUP AND DETERMINED BY THE MANAGEMENT/GOVERNANCE STRUCTURE.

IT WAS AGREED THAT THE ABOVE LIMIT ON PARTICIPATION IS ONLY WITH RESPECT TO MEMBERSHIP IN CSNET. LANDWEIER POINTED OUT THAT THE SOFTWARE WILL BE IN THE PUBLIC DOMAIN AND COMMERCIAL NETWORK ACCESS IS AVAILABLE TO ALL. INDEED, IT WAS AGREED THAT INFORMATION ON SOFTWARE/HARDWARE SPECIFICATIONS WILL BE MADE AVAILABLE TO OTHER DISCIPLINES AS WELL AS TO INDUSTRY GROUPS. DURING THE DEVELOPMENT/IMPLEMENTATION PHASE OF THE PROJECT, LINES OF COMMUNICATION WILL BE ESTABLISHED WITH OTHER DISCIPLINES SUCH AS COGNITIVE SCIENCE. HOWEVER, WHILE THESE DISCIPLINES WILL BENEFIT EVENTUALLY, THE PRIMARY FOCUS BE ON THE COMPUTER SCIENCE COMMUNITY.

FELDMAN AND OTHERS MENTIONED A NEED TO DEAL WITH SUCH PROBLEMS AS "JUNK MAIL" AND OTHER INAPPROPRIATE ACTIVITIES WHICH MIGHT ARISE FROM A GREATLY EXPANDED (FROM THE PRESENT ARPANET) USER COMMUNITY AND EASY ACCESS VIA COMMERCIAL NETWORKS. ECONOMIC BARRIERS WERE SUGGESTED AS WELL AS VARIOUS SOFTWARE FEATURES WHICH MIGHT SCREEN MESSAGES. IT WAS SUGGESTED THAT RULES SIMILAR TO THOSE DEALING WITH AUTO DIALING OF NUMBERS IN ORDER TO PLAY RECORDED MESSAGES WOULD PROBABLY EVENTUALLY BE ADOPTED.

FELDMAN STATED AND CEF AGREED THAT THE PROTOCOL ARCHITECTURE SHOULD BE BASED ON INTER-PROCESS COMMUNICATION (IPC) AND THAT SPECIFICATIONS FOR THIS SHOULD BE INCLUDED FROM THE BEGINNING. THE STAGED APPROACH WILL ALLOW FOR QUICK IMPLEMENTATION OF BASIC SERVICES WITH MORE SOPHISTICATED APPLICATIONS SUCH AS THOSE REQUIRING AN IPC PROTOCOL BECOMING AVAILABLE LATER.

EIGHT ITEMS WERE MENTIONED AS REQUIRING FURTHER STUDY:

- SERVICE OR APPLICATIONS
- PROTOCOL ARCHITECTURE (EARLY DESIGN)
- ALTERNATIVE IMPLEMENTATION METHODS, COSTS
- FUNDING CHARACTERISTICS (START-UP AND CONTINUING)
- MAINTENANCE AND OPERATION
- INFORMATION DISSEMINATION AND USER SUPPORT
- GOVERNANCE
- INDUSTRIAL COOPERATION

COMMITTEES WERE ESTABLISHED TO STUDY THE ABOVE AND REPORT BACK AT THE AUGUST MEETING. (SEE ACTION 3)

A NUMBER OF ISSUES AROSE WHICH ARE TO BE CONSIDERED BY THE ORGANIZATION COMMITTEE. THE FIRST INVOLVED THE TYPE OF OR-

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ENTITY, INCORPORATED), A GROUP OF UNIVERSITIES USING THE
JUDICIAL SUBMISSION PROCESS AND A NEUTRAL EXISTING
ORGANIZATION (E.G., BEN, RAND, EDUNET/EDUCOM, SRI, ISI). THERE
WAS SOME FEELING THAT THE FIRST WOULD RESULT IN UNACCEPTABLE
DELAYS, ALTHOUGH FOR THE LONG RUN IT PROVIDES REAL ADVAN-
TAGES, IN PARTICULAR IN EMPHASIZING LATER EXPANSION TO OTHER
DISCIPLINES (THE UNIVERSITY CONSORTIUM FOR SCIENTIFIC
RESEARCH COMMUNICATIONS, FOR EXAMPLE?). THE SECOND WOULD BE
MORE APPROPRIATE THAN SUBMISSION BY A SINGLE UNIVERSITY,
PARTICULARLY IN LIGHT OF COMMENTS MADE BY REVIEWERS OF THE
ORIGINAL CSNET PROPOSAL. CAUTIONS WERE SUGGESTED REGARDING
PROFIT MAKING ORGANIZATIONS (OPTION 3). THERE WAS CONSENSUS
THAT EVEN WITH NON-PROFIT ORGANIZATIONS, A GREAT DEAL OF
CARE SHOULD BE EXERCISED TO ENSURE RETENTION OF CONTROL BY
THE COMPUTER SCIENCE COMMUNITY. IT WAS GENERALLY AGREED
THAT REGARDLESS OF WHICH OPTION IS CHOSEN, INSTITUTIONAL AP-
PROVAL WILL BE REQUIRED. PARTICIPANTS WILL DISCUSS THIS
MATTER WITH THEIR ADMINISTRATIONS AND SEND RESULT TO
LANDWEER IN TIME FOR THE ORGANIZATION COMMITTEE
MEETING (SECOND HALF OF JULY).

A SURVEY OF COMPUTER SCIENCE DEPARTMENTS, PREPARED BY BOB
RITCHIE IN CONSULTATION WITH M. KERN, K. CURTIS AND P. HELLER
WAS DISCUSSED. THE PURPOSE OF THE SURVEY IS TO ASSESS THE
NETWORKING NEEDS OF THE COMMUNITY, TO GATHER INFORMATION ON
AVAILABLE COMPUTING RESOURCES (POTENTIAL HOSTS) AND TO
DETERMINE CURRENT NETWORKING USAGE. DOUBTS WERE EXPRESSED
ON WHETHER COMMUNITY NEEDS COULD BE ADEQUATELY DETERMINED BY
A SURVEY. ALAN BATSON STATED THAT THOSE NOT CURRENTLY USING
NETWORKING WOULD HAVE DIFFICULTY RESPONDING. ONE SUGGESTED
ALTERNATIVE INVOLVES A SHORT LIST OF QUESTIONS FOR DEPART-
MENT CHAIRMEN TO BE COMPLETED AT THE JULY SNOWBIRD MEETING.
RITCHIE AND KERN WILL CONTINUE DISCUSSIONS TO DECIDE UPON
THE STRATEGY WHICH WILL YIELD THE MOST ACCURATE AND COMPLETE
DATA.

ACTIONS:

1. THE PLANNING GROUP RECOMMENDS THAT DARPA AND NSF CONTINUE
DISCUSSIONS LEADING TO PROVISION OF ACCESS TO ARPANET
RESOURCES FOR A BROADER COMPUTER SCIENCE COMMUNITY BY MEANS
OF INTERNETTING ARPANET TO OTHER PRIVATE AND COMMERCIAL NET-
WORKS AND BY PLACING ADDITIONAL SITES DIRECTLY ON THE AR-
PANET.

2. THE PLANNING GROUP AGREED THAT THE FOLLOWING SERVICES
DESIRED BY THE COMPUTER SCIENCE COMMUNITY, SHOULD BE AVAIL-
ABLE ON CSNET. A STAGED APPROACH, INVOLVING EARLIER IMPE-
MENTATION AND HENCE AVAILABILITY OF SERVICES TO BE UTILIZED
BY A LARGER SUBSET OF THE COMMUNITY, SHOULD BE ADOPTED.

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- A. MEMORANDUM AND SIMPLE FILE TRANSFER
- B. REMOTE TERMINAL ACCESS AND SOPHISTICATED FILE TRANSFER
- C. PROCESS TO PROCESS COMMUNICATION (IPC)

4. COMMITTEES WERE ESTABLISHED TO STUDY POSSIBLE CSNET APPROACHES IN THREE AREAS: ORGANIZATION, PROTOCOL ARCHITECTURE IMPLEMENTATION STRATEGY. THEY ARE TO MEET IN JULY AND WILL PREPARE REPORTS BY AUGUST 1 FOR DISTRIBUTION PRIOR TO THE AUGUST MEETING OF THE PLANNING GROUP.

ORGANIZATION:

CREATION/PROPOSAL PREPARATION/FUNDING CHARACTERISTICS
COMMUNITY DEFINITION
GOVERNANCE/MANAGEMENT
FINANCIAL-TECHNICAL MAINTENANCE
SERVICES/USER SUPPORT/INFORMATION DISSEMINATION
EVOLUTION
LANDWEBER-CH, BATSON, HEARN, HELLER, KAHN, KERN, RITCHIE

PROTOCOL ARCHITECTURE:

CERF-CH, FELDMAN, HABERMANN (OR OTHER FROM CMU), LANDWEBER/RITCHIE

IMPLEMENTATION STRATEGY:

ALL LEVELS OF SERVICE
LONG TERM/SHORT TERM
COSTS
FARBER-CH, ARDEN, CORBATO, CROCKER, DENNING, PICKENS, RITCHIE/LANDWEBER

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Page 2, Paragraph beginning "Vinton Cerf" - replace "Users who cannot justify or who do not need the high bandwidth of ARPANET will obtain access via a commercial network. ARPANET would only also be used for network research, for example, by those requiring measurements of performance characteristics." Replace with: "For example, to do research on a network one would use ARPANET, while to get more elementary service a commercial net would suffice."

Same paragraph beginning "They can also help with the acquisition of required hardware." Replace with: "They can also help by making resources available."

Page 2, Paragraph beginning "Tony Hearn: - add to "The front-end connection to TOPS-20 is complete, and required about 15 programmer months."

Page 3, Paragraph beginning Paul Heller - Add after "Paul Heller described the organization and goals of EDUNET/EDUCOM. "EDUCOM is a consortium of 350 universities whose mission is to improve the use of technology in higher education." Add after: purchase of communications services from Telenet. "(currently 22%)." Add after: log-in was also described.

"He emphasized the importance of interdisciplinary groups to EDUCOM, and noted relationships already established with groups in law education and in chemical engineering."

Add in new paragraph at bottom of page 3

"Terminology

At this point, two ambiguities were resolved. It was agreed that CSNET would be used to designate any computer science research community network arising from these sessions, and not be restricted to the particular strategy in the year-old proposal.

The group then focused upon ambiguities about protocol levels which were plaguing the discussion. A chart was developed, largely by Vint Cerf, to help in the discussion: